



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/777,719	02/12/2004	Janet Elizabeth Adkins	AUS920031018US1	5934

35525 7590 12/29/2006  
IBM CORP (YA)  
C/O YEE & ASSOCIATES PC  
P.O. BOX 802333  
DALLAS, TX 75380

EXAMINER

BLACK, LINH

ART UNIT PAPER NUMBER

2163

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/29/2006	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/777,719

Applicant(s)

ADKINS ET AL.

Examiner

LINH BLACK

Art Unit

2163

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

This communication is in response to the Applicants' documents dated 10/18/06.

Claims 1-24 are pending in the application. Claims 1, 12, 18, and 24 are independent claims.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-2, and 7 are rejected under 35 U.S.C. 102(e) as being anticipated by McGovern et al. (US 20050097260).

As per claim 1, McGovern et al. teach

detecting a request to modify a data block in the file system; responsive to detecting the request - pars. 0006, 0045-0046, 0081, 0054 (block-based files); writing metadata describing the data block in the file system into a snapshot image – pars. 0020 (writing metadata), 0050, 0058-0063 (snapshot, a persistent consistency point image; PCPI: a persistent consistency point image is a point in time representation of the storage

Art Unit: 2163

system and particularly, of the active file system stored on a storage device...PCPI can also include other information: metadata about the active file system at the particular point in time for which the image is taken), 0068, 0078, 0081 (request for modifications), 0104, 0122 (the metadata file attributes or properties to determine the last modified time on the file), 0115 (metadata).

wherein the snapshot image is updated to maintain a consistent block level image of the file system from a point in time when the snapshot was created – pars. 0058-0063.

copying data for the data block in the file system to the snapshot image to further update the snapshot image – pars. 0046, 0058-0063 (one common form of update involves the use of a snapshot process in which the active file system at the storage site, consisting of inodes and blocks...), 0062-0063.

and modifying the data block in the file system after copying of the data in the data block to the snapshot image has occurred, wherein the snapshot image is usable to return the file system to a state prior to modifying the data block in the file system – pars. 0058-0063 (snapshot, a persistent consistency point image; PCPI: a persistent consistency point image is a point in time representation of the storage system and particularly, of the active file system stored on a storage device...PCPI can also include other information: metadata about the active file system at the particular point in time for which the image is taken), 0068, **0078**, 0081 (request for modifications), 0104, 0122 (the metadata file attributes or properties to determine the last modified time on the file), 0078, 0114.

As per claim 2, McGovern et al. teach

storing an identification of information...- pars. 0059, 0064, 0070, 0141.

As per claim 7, McGovern et al. teach writing an in-use state of snapshot map entries for a snapshot map group to the snapshot image prior to any before-image data blocks referenced by the snapshot map group being written to the snapshot image – pars. 0052, 0062, 0075, 0081-0082.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-5, 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over McGovern et al. (US 20050097260), and further in view of Edwards (US 20030182389).

As per claims 3-4, McGovern et al. teach 0054 (block-based files); writing metadata describing the data block in the file system into a snapshot image – pars. 0020 (writing metadata), 0050, 0058-0063 (snapshot, a persistent consistency point image; PCPI: a persistent consistency point image is a point in time representation of the storage system and particularly, of the active file system stored on a storage device...PCPI can also include other information: metadata about the active file system at the particular point in time for which the image is taken), 0068, 0078, 0081 (request for modifications),

Art Unit: 2163

0104, 0122 (the metadata file attributes or properties to determine the last modified time on the file), 0115 (metadata).

wherein the metadata of the snapshot image is used to reconstruct the state of the file system in response to a selected event – pars. 0078, 0112, 0116.

McGovern et al. do not teach summary map, snapshot map. Edwards teaches system for performing an on-line check of a file system – the title; the summary stores metadata associated with determining which blocks are used by any snapshots stored in the file system – par. 0043; a snap map – par. 0044; header and expansion segment – pars. 0115-0116. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine both teachings to effectively manage the snapshots of the file system, thus, help provide a better file modification system.

As per claim 5, McGovern et al. teach wherein the selected event failure the data processing system while modifying the data block in the file system – pars. 0048, 0057, 0133.

As per claim 6, McGovern et al. teach wherein the selected event is user input requesting restoration of the file system to a consistent state – pars. 0021, 0078-0079, 0109, 0112, 0117.

As per claim 8, McGovern et al. do not teach marking a summary snapshot map entry as being initialized and marking a location of the snapshot map group after writing the

Art Unit: 2163

in-use state of data blocks for the snapshot map group to the snapshot image. Edwards teaches the summary stores metadata associated with determining which blocks are used by any snapshots stored in the file system – par. 0043; a snap map – par. 0044; header and expansion segment – pars. 0115-0116; marking a summary snapshot map entry... - pars. 0050, 0054, 0059. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine both teachings to effectively manage the snapshots of the file system, thus, help provide a better tracking system for file modification system.

As per claim 9, McGovern et al. teach initiating a segment header of a new last segment in of segments before a prior segment is modified point to the new last segment - pars. 0115-0116.

As per claims 10-11, McGovern et al. recovery of data – pars. 0057-0058; McGovern et al. do not teach wherein the snapshot map contains snapshot map pages which are reconstructed during recovery operation; wherein the recovery operation handles copying of before-images of data blocks in the file system that are to be modified by the recovery operation. Edwards teaches the summary stores metadata associated with determining which blocks are used by any snapshots stored in the file system – par. 0043; a snap map – par. 0044; header and expansion segment – pars. 0115-0116; marking a summary snapshot map entry... - pars. 0050, 0054, 0059; link lost and found – fig. 9, item 920. Thus, it would have been obvious to one of ordinary skill in the art at

Art Unit: 2163

the time of the invention to combine both teachings to recover all snapshots mappings after system failures efficiently.

Claims 12-24 are rejected based on the same rationale as claims 1-9.

### ***Response to Arguments***

Applicant's arguments filed 10/18/06 have been fully considered but they are not persuasive. Regarding the Applicant's argument that McGovern does not teach modifying a data block in the file system in the response on page 9 of 12, Examiner finds that McGovern teaches block-based files – par. 0054; McGovern does not teach writing metadata describing the data block in the file system into a snapshot image, Examiner finds that McGovern does teach writing metadata describing the data block in the file system into a snapshot image – pars. 0020 (writing metadata), 0050, 0058-0063 (snapshot, a persistent consistency point image; PCPI: a persistent consistency point image is a point in time representation of the storage system and particularly, of the active file system stored on a storage device...PCPI can also include other information: metadata about the active file system at the particular point in time for which the image is taken), 0068, 0078, **0081 (request for modifications)**, 0104, 0122 (the metadata file attributes or properties to determine the last modified time on the file), 0115 (metadata). wherein the snapshot image is updated to maintain a consistent block level image of the file system from a point in time when the snapshot was created – pars. 0058-0063.



copying data for the data block in the file system to the snapshot image to further update the snapshot image – pars. 0046, 0058-0063 (one common form of update involves the use of a snapshot process in which the active file system at the storage site, consisting of inodes and blocks...), 0062-0063; snapshot in-use state – pars. 0020, 0060, 0058-0063, 0078, 0080-0081, 0113-0114.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

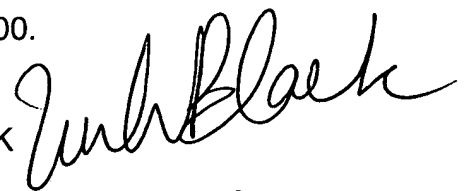
Art Unit: 2163

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LINH BLACK whose telephone number is 571-272-4106. The examiner can normally be reached on Mon.-Thurs..

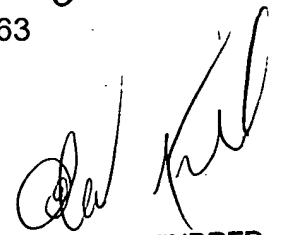
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on 571-272-1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LINH BLACK  
Examiner  
Art Unit 2163



December 21, 2006



ALFORD KINDRED  
PRIMARY EXAMINER